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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/632,720

07/31/2003

Mira S. Misra

LUM-02-08-01

2775

32566

7590

08/04/2004

PATENT LAW GROUP LLP
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EXAMINER

FARAHANI, DANA

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 08/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/632,720

Applicant(s)

MISRA ET AL.

Examiner

Dana Farahani

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-26 in the reply filed on 5/18/04 is acknowledged.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-14, 16, 17 and 19-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koike (US Patent 6,620,643).

Regarding claims 1, 5-7, 9, 13, 16, 17, 19, 21, 22, 24 and 26, Koike discloses in figure 1, a light emitting device comprising a region of first conductivity type (108 or 103); a region of second conductivity type (the other region of 108 or 103); an active region 160 disposed between the region of first conductivity type and the region of second conductivity type, the active region being capable of emitting light having a wavelength in the region of second conductivity type; and a surface reflective 150 of the light emitted by the active region, wherein one of the region of first conductivity type and the region of second conductivity type is disposed between the active region and the reflective surface. Although, Koike does not explicitly state the active region has a total thickness less than or equal to about 0.25 of the wavelength and that a portion of the active region is located between 0.6 and 0.75 of the wavelength from the reflective surface, it

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would have been obvious to one of ordinary skill in the art to make the arrangement regarding the distance of the reflective surface from the active region, since discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claims 2, 20 and 23, there are two quantum well layers (QW) 161B and 161G separated by a barrier layer 162.

Regarding claim 3, each of the QW layers has a thickness ranging between about 10 and 60 Å, and the barrier layer has a thickness ranging from about 50 to 200 Å (see column 4, lines 50-60).

Regarding claim 4, there are two barrier layers 162, as can be seen in the figure.

Regarding claims 8, 10-13 and 25, Koike discloses the material for layer 150 can be a reflective metal, but does not explicitly state silver is being used as the layer, or a III-phosphide active layer. It would have been obvious to one of ordinary skill in the art to use these materials, since it is well known that silver is very light reflective and also use a phosphide light emitting layer to take advantage of the light emitting properties associated with group 3 phosphide layers.

Regarding claim 14, there is a second electrode 120, and a submount 101.

4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koike as applied to claim 14 above, and further in view of the Japanese patent 5190901.

Koike substantially discloses the limitations in the claims, as discussed above, including a plurality of leads 120, but does not disclose a lens overlying the active region.

The Japanese patent teaches a lens is used on an active region in order to improve the light efficiency thereof (see the abstract). Therefore, it would have been obvious to one of

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ordinary skill in the art at the time of the invention to use a lens on the active region of the Koike structure to adjust the properties of the emitted light, such as brightness, for a particular application.

5. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koike as applied to claim 1 above, and further in view of Brinkmann et al., hereinafter Brinkmann (US Patent 6,753,214).

Koike substantially discloses the limitations in the claims, as discussed above, except for the reflective surface being a distributed bragg reflector.

Brinkmann discloses at column 6, lines 46-48, that distributed bragg reflectors are commonly used as a semiconductor mirrors. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a distributed bragg reflector as the reflective layer of the device of Koike to even get a stronger reflection, and consequently contribute to the intensity of the emitted light from the device. This feature would be useful for an application of the light emitter of the Koike reference which requires the particular light intensity that a bragg reflector produces.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dana Farahani whose telephone number is (571)272-1706. The examiner can normally be reached on M-F 9:00AM - 6:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M Fahmy can be reached on (571)272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

D. Farahani

LONG PHAM
PRIMARY EXAMINED